

Falls were the main cause of physical trauma, with falls from a height usually occurring in younger children and falls on the level in older children.

Foreign bodies seldom had serious consequences but the ingestion of them seemed to be a manifestation of the same urges that cause children to ingest chemicals and drugs.

This study emphasizes the principle that infants must be completely protected from hazards, and older children must be taught good safety habits.

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POTT'S DISEASE

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SINCE THE ADVENT of the antimicrobials in tuberculosis it is pertinent to assess their effects in regard to Pott's disease. To do this we have tabulated some of the data seen in this condition at the Baker Memorial Sanatorium in Calgary. While the series is not large, and the follow-up period is short, it does serve to show the great change which is manifest in this disease now. Before 1949, cases of Pott's disease were treated only coincidentally with pumonary disease at this sanatorium, but since then cases of non-pulmonary disease have been admitted there. We therefore have no adequate experience before antimicrobials were introduced, and must compare our results with those seen elsewhere at that time.

Pott's disease can be broadly defined as tuberculous disease of the vertebræ. As a rule it is slow in developing and characterized by pain, spinal deformity, abscess formation, and in some cases paralysis. In Scotland, Pott's disease was essentially a disease of childhood. The fantastic incidence of bovine tuberculosis there accounted for this. In our sanatorium the greatest incidence was in the third decade of life, less than a quarter of the cases occurring before that time.

The source of the infection varies considerably. Infection may come from a primary lesion in the

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RÉSUMÉ

Une revue de 150 cas d'accidents dans une clientèle de pédiatrie montra que 70% d'entre eux étaient causés par des traumatismes physiques, 15% concernaient des corps étrangers, 11% étaient des empoisonnements et 4% des brûlures. Les deux tiers de ces malades étaient d'âge préscolaire. Jusqu'à trois ans garçons et filles se trouvèrent également représentés; après trois ans le nombre des garçons dépassa de deux fois et demie celui des filles. Environ 65% de ces accidents se produisirent à la maison ou dans son voisinage immédiat. La plupart des traumatismes physiques proviennent de chutes d'une certaine hauteur chez les petits et au sol même chez les plus grands. Les corps étrangers causent rarement des complications graves, mais leur ingestion relève de la même impulsion qui pousse les enfants à manger des produits chimiques et des médicaments. Cette étude fait ressortir le besoin de protéger les bébés contre tous les dangers et d'inculquer aux enfants en général des principes de sécurité.

lung, draining to hilar nodes, with spread by contiguity to the vertebral bodies (Fraser). On the other hand, it may come by way of a lymphogenous spread either to the thoracic duct or to the veins of the involved node. The bacteria act as emboli in the blood stream. Those which do not produce infarction are destroyed by normal body mechanisms. However, if resistance is low, miliary disease results. On the other hand, those organisms which cause infarction of an end artery lead to devitalization of the part, and therein multiply. This leads to an avascular necrosis in which the radiological signs of relatively increased density may be masked by the decalcification which tuberculous infection produces. However, the end result is typical—decalcification without sclerosis. The tiny focus of infection may be anywhere in the vertebral body, but is most commonly near the epiphysial plate in children. From the epiphysial plate the disease spreads to involve the adjacent bone and disc. In adults, the earliest finding may be involvement of the disc. From either of these, the infection may track out beneath the ligaments either in front or behind. The latter can result in paraplegia with x-ray evidence of bone disease.

Hodgson and Stock¹ recently discussed the pathology of psoas abscess. They point out that this is a subligamentous stripping rather than bulging into the psoas muscle. The destructive process in the vertebræ is curiously limited as a rule to the bodies of the vertebræ. As the disease progresses,

the decalcified and eroded bone collapses, leading to the typical deformity of kyphosis.

The age incidence in Alberta is not comparable to that in areas where bovine disease is prevalent. Out of 60 cases 38 (63.3%) were active and the age on admission as follows:

TABLE I.

0 - 9	10 - 19	20 - 29	30 - 39	40 - <
6	5	9	7	11

It will be noted that 18 (47.3%) of the patients were over the age of 30. The sex incidence (all cases) was 36 males to 24 females, which is a little out of line with that expected. It is usually about equal.

There was a preponderance of lower dorsal and upper lumbar lesions, and it is interesting to note that we have no case of a cervical lesion (Table II).

TABLE II.—SITE OF LESIONS

Thoracic.....	32
Dorso-lumbar.....	9
Lumbar.....	22
Lumbo-sacral.....	3

In our series we had five patients with a double spinal lesion and one with a triple lesion.

As in other series of cases, Pott's disease was frequently associated with other tuberculous lesions. They were sometimes concurrent, sometimes not. The distribution is shown in Table III.

TABLE III.—INCIDENCE OF OTHER TUBERCULOUS LESIONS

Pulmonary.....	24 cases (40%)
Genito-urinary.....	7 cases (11.7%)
Cervical lymph nodes.....	3 cases (5%)
Pott's abscess.....	27 cases (45%)
Bone.....	8 cases (13.3%)
Abdominal.....	4 cases (6.7%)

Genito-urinary complications were not as prominent a feature as in other series. All cases had urine cultures and further genito-urinary investigation as necessary.

There was one case of paraplegia (1.7%). Three patients died, two deaths being related to tuberculosis and the other to a retroperitoneal tumour, representing a death rate of 3.3% from tuberculous disease.

In former series (see Girdlestone and Somerville³), the mortality in Pott's disease has been very considerable—36% died in ten years and 15% were dead in the first two years. Our series is neither large nor long enough for adequate comparison, but the figures reported above are suggestive of improvement.

DIAGNOSIS

The history is usually helpful, the onset being often vague or associated with a minor accident.

There is often weight loss and loss of strength, sometimes pain. Night cries are frequently reported in children. A family history of tuberculosis or of drinking raw milk may be obtained. A change in stance may be seen, and motion may be limited by muscular resistance in all directions. The Mantoux test is almost invariably positive.

TREATMENT

This was surgical in most of our cases but not all. Fusion was not invariably employed either. One patient with an otherwise inactive lesion (previously fused) had a psoas abscess explored and drained. (Levy and Hoen⁵ reported a case of paraplegia developing after adequate spinal fusion.) The one case of Pott's paraplegia had a costo-transversectomy with almost complete recovery. According to her report at the out-patient clinic in July 1956, she was left with a slight weakness in the left leg.

Anterior fusion has been carried out in some centres (see Hodgson and Stock,¹ and Griffiths and his co-workers⁶), but at our sanatorium the operation has been of modified Hibbs type, using homologous bone grafts. Recently Weinberg⁸ in California reported 13 cases of Pott's abscess treated by excision of the abscess and sequestrectomy with antimicrobial cover. He used a lumbar approach and reports solid fusion in 12 out of 13 cases, with a one and a half to six year observation period.

Medical treatment alone was used in eight active cases, and surgical intervention was carried out in 30. In two old cases draining sinuses were explored, and there was the aforementioned costo-transversectomy. Fusion was performed in this last case five months after drainage.

There was considerable individual variation in the treatment we used but the basic principles were these:

1. The case was managed medically for an adequate period of treatment with antimicrobial drugs and absolute bed rest on a Stryker frame. This usually required six months.
2. If there was complete healing of the lesion at this time, operation was not required, and drugs were continued for a year.
3. If there was destruction either of the centrum or disc, adequate fusion was carried out. This involved the site of the lesion and two vertebrae above and below.

The results of treatment of the 38 cases are interesting. Of these patients 25 are alive and well, although one had a fracture of her graft. Seven are still in sanatorium and one is in a mental hospital. One has weakness in the left leg, one has a "sore back", and one a draining sinus after operation "elsewhere". A few representative cases are mentioned in the following pages.

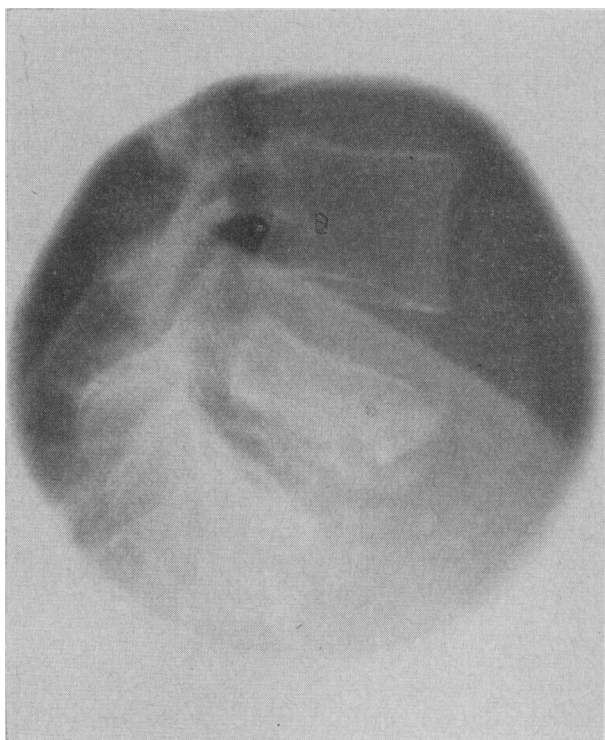


Fig. 1.—This shows marked destruction of the centra of L5 and S1, with collapse of the disc space.

CASE 1 (C.C.): This patient, a 43-year-old male, had a lumbosacral lesion (Fig. 1). He had an enormous Pott's abscess (Fig. 2). This was aspirated on several occasions, an average of 800 c.c. being removed each time. His back was fused from L4 to S1 and he is recovering satisfactorily.

An interesting sidelight on this case was that he was an exceedingly stout man, so that when he was turned on his Stryker bed his back flexed over his paunch. This flexion was corrected by using an anterior plaster shell on the face of his frame.

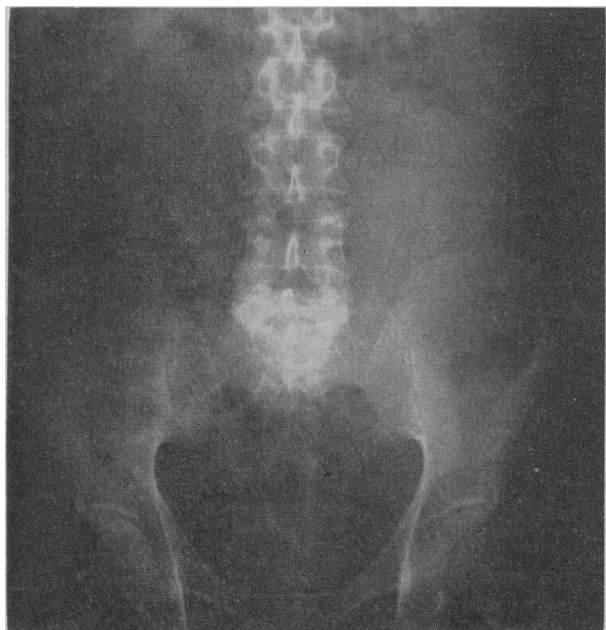


Fig. 2.—An enormous Pott's abscess extends from L2 to below the promontory of the sacrum.

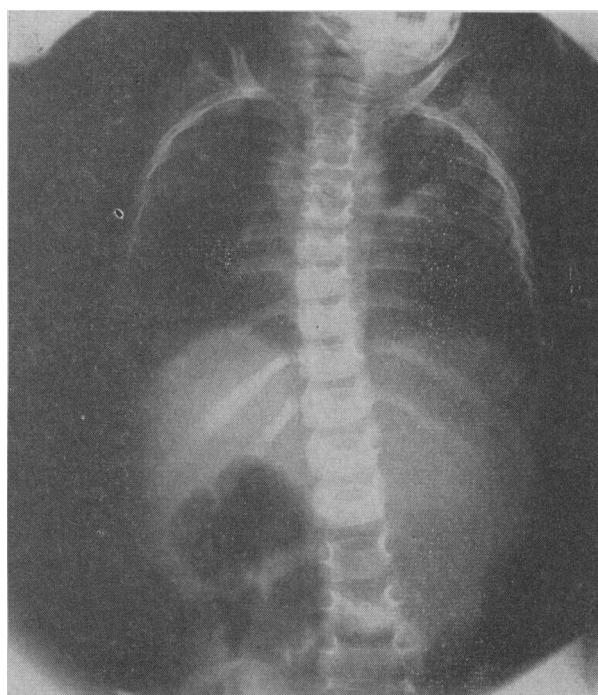


Fig. 3.—This Pott's abscess is centred about D6. Note the marked destruction visible even in this antero-posterior view of D4, 5 and 6. This is the type of lesion in which one must be alert to the possibility of a Pott's paraplegia developing.

CASE 2 (M.J.): This was a girl of two years with an extensive lesion from D3 to D6 (Fig. 3). She had a large abscess which would make one alert for an early Pott's paraplegia. However, she responded dramatically to treatment. Her back was fused in February 1953, and she is a healthy, well-developed girl with no obvious deformity at the present time.

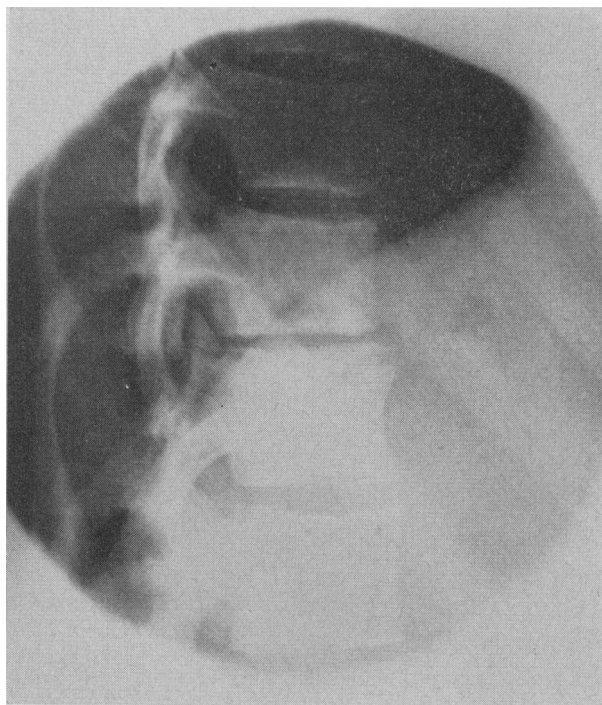


Fig. 4.—A destructive lesion at D11-D12 has destroyed the disc space but regeneration is beginning anteriorly. This patient was examined because she was a contact of her husband and had contracted pulmonary disease from him.

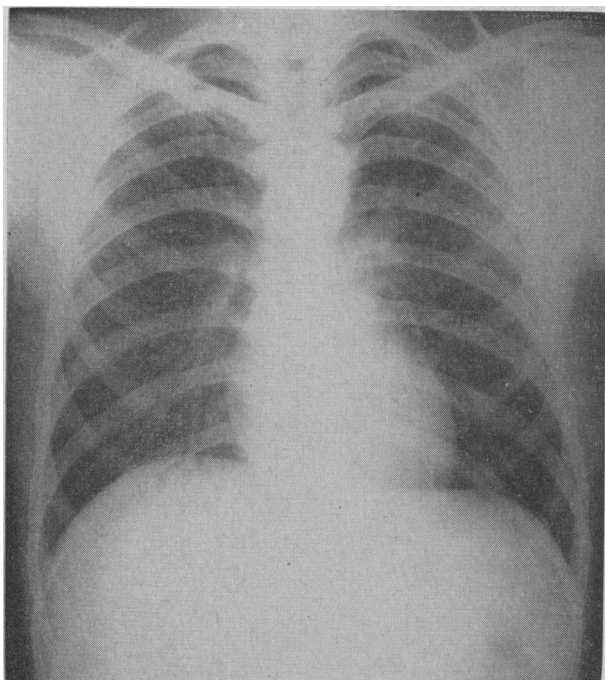


Fig. 5.—This young man had miliary disease and, as well as the widespread "ground-glass" chest lesion, had destruction of L1-2.

CASE 3 (Mrs. E.H.): This patient has an interesting history. During the war her husband developed a pleurisy with effusion. He received sanatorium treatment on his return to Canada, but did not attend for check-up as well as was desirable. He presented early in 1956 with cavities, and meantime had infected his wife and two children. The wife complained of back pain, and after admission to the sanatorium a lesion was found at the level of D11 to D12 (Fig. 4), as well as a tuberculous dactylitis of the right middle finger.

CASE 4 (K.S.): This young man of 25 years presented with a miliary lesion (Fig. 5), and further investigation revealed a lesion at L1-2 and an extensive abscess. Despite aspiration and antimicrobial therapy, the abscess went on to present in the inguinal region. After his chest lesion cleared, he underwent back fusion and is convalescing.

CASE 5 (E.G.): This young woman had been unwilling many years before to accept a sanatorium regimen and was treated elsewhere by an immediate fusion. She presented 11 years later with an abscess on her back and an extensive lesion from D9 to L3. She had a very long back fusion and has progressed satisfactorily.

SUMMARY

Sixty cases of Pott's disease have been seen at the Baker Memorial Sanatorium from 1948 to 1957.

Treatment combined adequate antimicrobial therapy with immobilization and frequently with surgery.

Mortality has greatly declined.

The long-term outlook is not unfavourable.

I wish to thank Dr. L. M. Mullen, Medical Superintendent of the Baker Memorial Sanatorium, for his help and permission to carry out these studies, and also Mr. Waddell of the Colonel Belcher Hospital, Calgary, for his excellent photographs of the radiographs.

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RÉSUMÉ

Après un bref rappel de l'étiologie et de la pathogénèse probable du mal de Pott, l'auteur analyse les faits cliniques de 60 cas traités au Sanatorium Baker Memorial de Calgary. Cinq d'entre eux présentaient une lésion double et un autre une triple lésion. La mortalité tuberculeuse s'éleva à 3.3%, ce qui semble une amélioration à comparer aux chiffres cités par Girdlestone et Sommerville. Le traitement chirurgical fut appliqué à la majorité des cas (technique modifiée de Hibbs avec greffe osseuse homologue) précédé d'une préparation médicale d'environ six mois fondée sur les antibiotiques et le repos au lit. Dans certains cas les lésions s'améliorèrent au point que l'intervention ne fut plus nécessaire. Le pronostic de ces cas est moins sombre qu'il ne l'était jadis.

EXPERIMENTS IN IMMUNITY IN CANCER*

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IN THE LITERATURE during the past 18 months, reports show a strong tendency for opinions to swing toward the idea of immunity or host resistance against cancer.^{1, 4-11} This has been further supported by the finding of a causative virus in certain breast cancers in mice, together with the knowl-

edge that a virus causes Rous sarcoma. Perhaps if one cancer is caused by a virus, all may be so caused. If a virus is involved, then it is known that against virus diseases an antibody can be and is developed, as in poliomyelitis, whooping cough, and measles. Brilliant work has recently been done in photographing a virus in breast cancer in mice, and there are articles which postulate a virus as a possible cause of cancer.² The thinking along these lines for the past 30 years³ led me to perform some experiments to explore the possibility of immunity in cancer.

This is a report of further progress since reporting to the Academy of Medicine in Toronto³

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